CLAIMS

WE CLAIM:

1. A library system for creating programs executable on an industrial controller to control an industrial process, the library system comprising:

a library manager collecting in unique files, at least first and second program fragments having shared control variables determining physical inputs or outputs

5   exchanged with the industrial process, the shared control variables having common tags;

a first program builder accepting user input to link in a first linking process instances of first program fragments from files in the library manager together to create a first portion of the control program; the first program builder renaming tags of

10   control variables of duplicate instances of first program fragments to be unique; and

a second program builder accepting information about the first linking process, and user input, to create a second portion of the control program from second program fragments taken from the same files of the first program fragments used in the first portion of the control program, the second program builder renaming the tags of the

15   control variables of the second program fragments to comport with the renaming of the tags of the control variables of the first portions by the first program builder;

whereby second program fragments can communicate with the multiple instances of the first program fragments through common tags.

2. The library system of claim 1 wherein the first program fragments provide control logic for industrial control and the second program fragments provide visualization of industrial control.

3. The library system of claim 1 wherein the renaming of the first and second program fragments incorporate at least a portion of a name of their unique file of the library manager into the tags of the renamed first and second program fragments.

4. The library system of claim 1 wherein the library manager holds at least two first program fragments having shared control variables with a second program fragment.

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5. The library system of claim 4 wherein the second program builder accepts user input to select from among the at least two first program fragments, a first program fragment with which the renaming of the tags of the control variable of the second program fragment will comport.

6. The library system of claim 5 wherein the second program builder provides at least one menu providing representations of first and second program fragments related to a common file of the library manger and wherein the user input for creating a second portion of the control program selects representations of the program fragments from the menu.

7. The development system of claim 6 wherein the menu depicts the first program fragments as dependent on particular items of physical equipment of the controlled process.

8. The library system of claim 1 wherein the library manager holds at least two second program fragments having shared control variables with a first program fragment.

9. The library system of claim 8 wherein the second program builder accepts user input to select from among the two second program fragments, a second program fragment with which the renaming of the tags of the control variables of the second program fragment to a first program fragment will comport.

10. The library system of claim 9 wherein the second program builder provides at least one menu providing representations of first and second program fragments related to a common files of the library manger and wherein the user input for creating a second portion of the control program selects representations of the program fragments from the menu.

11. The development system of claim 10 wherein the menu depicts the first program fragments as dependent on particular items of physical equipment of the controlled process.

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12. The library system of claim 1 wherein the files of the library manager denote phases of operation of a machine of the controlled process and wherein the files also include information related to the phase of operation denoted by the file but not a program fragment.

13. The library system of claim 1 wherein the first program fragments written in a language selected from the group consisting of: function block language, structured text language, ladder logic language and sequential function chart language.

14. The library system of claim 1 wherein the renaming is performed by concatenating a unique identifier onto the tag of the control variable.

15. The library system of claim 1 wherein the files of the library manager are identified to equipment of the controlled process.

16. A library system for creating programs executable on an industrial controller to control an industrial process, the library system comprising:

a library manager collecting in unique files, first and second program fragments having shared control variables representing physical inputs or outputs exchanged with the industrial process, the shared control variables having common tags;

a first program builder accepting user input to link in a first linking process instances of first program fragments from files in the library manager together to create a first portion of the control program; the first program builder renaming tags of control variables of duplicate instances of first program fragments to be unique; and

a second program builder accepting information identifying the files of the library manger from which the instances of the first program fragments originated to display to a user second program fragments related to each instance of the first program fragments according to common library files, and accepting user input to select among the displayed second program fragments to create a second portion of the control program from second program fragments, the second program builder renaming the tags of the control variables of the second program fragments to

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comport with the renaming of the tags of the control variables of the first portions by the first program builder;

20   whereby second program fragments that can communicate with the multiple instances of the first program fragments through common tags are identified and utilized.

17. The library system of claim 16 wherein the first program fragments provide control logic for industrial control and the second program fragments provide visualization of industrial control.

18. The library system of claim 16 wherein the renaming of the first and second program fragments incorporate a common name of their unique file of the library manager.